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PATENT
Docket No. H 1215/1556.PCT/US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Application of Kluth et al

Serial No. 08/702,625 Examiner: J. Cooney
Filed: August 23, 1996 Art Unit: 1711
Confirmation No. 6917
TITLE: FOAM PLASTIC FROM DISPOSABLE PRESSURIZED CONTAINERS

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Alexandria, VA 22313-1450, on May 22, 2003

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RESPONSE

Mail Stop Non-Fee Amendment
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Official Action of January 3, 2003, Applicants respectfully request that the rejection be reconsidered in light of the following discussion.

Before discussing the rejections over the prior art, Applicants deem it prudent to set forth what they consider to be their invention. As presently claimed, the invention is a system for the production of a plastic foam. The system comprises a disposable pressurized container containing a composition comprising at least one polyisocyanate or isocyanate prepolymer having an NCO content of about 8% to about 30% by weight based on a prepolymer, at least one catalyst for the reaction of an isocyanate group when an OH group, at least one blowing agent and at least one foam stabilizer. Not later than one day after application of the plastic foam from the disposable pressurized container, the residue left in the pressurized container has a

diisocyanate monomer content of less was then 5% by weight based on the residual contents of the empty container. The system of the present invention is particularly useful in that the pressurized container after expulsion of the prepolymer composition can be disposed of without the necessity of using special land fills for hazardous materials.

The system of the present invention provides a substantial advantage for general use of the system of the invention.

Claims 15-36 and 40-65 stand rejected under 35 U.S.C. 102(e) as being anticipated by WO-94/18,256 (equivalent to US 6,054,499). Applicants respectfully submit that WO-94/18,256 is not a proper reference on which a rejection under 35 U.S.C. 102(e) can be based.

The publication date of WO-94/18,256 was August 18, 1994. The current application claims a priority date of February 24, 1994, (the filing date of German Patent Application 44 05 983.3). Applicants herewith submit a certified copy of the German priority document and a translation of the document.

The priority document sets forth the present invention and in particular shows all of the limitations in WO 94 /18256 (based on the equivalent US 6,054,499). Applicants respectfully submit that the translation of the priority document clearly shows that applicants were in possession of the invention about 7 months before the publication of WO 94/18256. Applicants respectfully request that the rejection under 35 U.S.C. 102(e) over WO 94/18256 be reconsidered and withdrawn.

Claims 15-36 and 40-68 stand rejected under 35 U.S.C. 103(a) as

unpatentable over Pauls (US 4,263,412) in view of Schmalsteig et al. (CA 2,084,698; hereinafter CA) and Minato et al. (US 5,086,175). Applicants respectfully submit that Pauls, CA and Minato et al., whether considered alone or in combination neither teach nor suggest the present invention.

Pauls discloses a process for the preparation of a dimensionally stable, one component, polyurethane foam from a storage stable mixture of a prepolymer based on polyols and containing isocyanate groups and an organic blowing agent. The aerosol container is a 2-compartment pressure pack with the polyurethane prepolymer containing isocyanate groups and a blowing agent included in the inner container and the pressure medium for expelling the prepolymer is contained in an outer container. The reference is completely silent concerning the amount of isocyanate monomer in the composition. However, at column 8, lines 25-35, the specification teaches:

> "Advantageously, however, the foamable mixture is prepared directly in the inner container of the two-compartment pressure pack. In this preferred procedure, the inner container is filled with the starting components for the preparation of the prepolymers containing isocyanate groups, and with the additives, but more especially with a mixture of separately prepared prepolymers containing isocyanate groups and additives, the amount introduced being from 50 to 85% by volume, preferably from 60 to 75% by volume, based on total volume."

Applicants submit that one skilled in the art would understand that the prepolymer is prepared according to the standard practice of reacting a large excess of polyisocyanate with a polyol to provide a mixture containing substantial amounts of monomeric polyisocyanates. There is neither teaching nor suggestion that the contents of the container after expulsion of the prepolymer contains less than 5% by

weight of polyisocyanate monomeric materials. There is no recognition that there would be any advantage to providing an empty aerosol container, for the polyurethane prepolymer, which contained less than 5% by weight of polyisocyanate monomer. In addition, there is neither teaching nor suggestion of how such a composition could be obtained.

Applicants further submit that there is neither teaching nor suggestion that the prepolymer have an NCO content from of 26 to 30% by weight as presently claimed.

The deficiencies in Pauls is not cured by combination with CA and Minato et al. CA and Minato et al. are directed to preparing polyisocyanate prepolymers which are useful for coatings, adhesives, architectural materials, molding materials, etc. CA is directed to particular polyisocyanates based on polyhydroxy polyethers, and toluene diisocyanate. The prepolymers are prepared by reacting a polyhydroxy polyether with excess of toluene diisocyanate and subsequently distilling the mixture to remove unreacted excess toluene diisocyanate. CA teaches that these polyisocyanates are particularly useful in a production of polyurethane lacquers. The prepolymers are particularly useful for preparing lacquers in that they are readily soluble in organic solvents (CA page 4, lines 32-35).

The polyisocyanates of CA are in a form of semi-rigid resins. There is neither teaching nor suggestion in CA that the semi-rigid resins would be useful for forming a foam and in particular for inclusion in an aerosol formulation for in situ generation of a foam. Applicants respectfully submit that there is no teaching nor suggestion that the polyisocyanates disclosed in CA would be useful for forming a foam in view

of the high viscosity and the requirement that the composition be diluted with a solvent. There is neither teaching nor suggestion that the solvent can be a low boiling point hydrocarbon such as propane or butane or a low boiling point fluorinated hydrocarbon. Applicants respectfully submit that the lacquer formulations of CA would neither teach nor suggest the use of the prepolymer in a aerosol formulation for the generation of a foamed resin.

The deficiencies in the combination of Pauls with CA are not cured by combination with Minato et al.

Minato et al. is directed to an isocyanurate which is substituted with a monoalcohol containing 10 to 50 carbon atoms. The polyisocyanurate composition is prepared by reacting a polyisocyanate in the presence of an isocyanurate catalyst to form a isocyanurate ring, the ring is substituted with a monohydroxyl alcohol containing 10 to 50 carbon atoms either during the cyanuration or after the cyanurate has been formed. The specification teaches that the composition is useful for the preparation for coatings, adhesives, architectural materials, molding materials and the like. The specification teaches that the polyisocyanate reaction product is then heated under vacuum to remove the unreacted monomer and the composition is then useful for the preparation of coatings, adhesives, architectural materials, molding materials and the like. There is neither teaching nor suggestion that the composition would be useful as a foaming material which is reactable with moisture in the air. From the uses disclosed, it would be clear that the composition is not intended for reaction with moisture in the air since it is disclosed that the

mixture is reacted with the polyols to form the finished coating.

Applicants respectfully submit that there is neither teaching nor suggestion to utilize the polyisocyanates of Minato et al. in a composition for use in an aerosol container for dispensing a foamed polyurethane resin.

The tenor of both the CA and Minato et al. references is the use of the material as a coating composition which requires that the polyisocyanate be soluble in various solvents. As can be seen, the solubility depends upon the particular polyols chosen to form the composition.

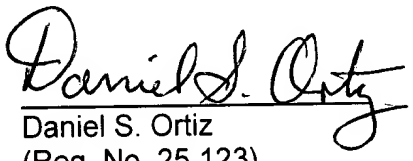
Applicants respectfully submit that reference CA and Minato et al. would neither teach nor suggest to one skilled in the art to utilize the polyisocyanates with the low monomer content in a composition for forming the polyurethane foam of Pauls. Applicants further submit that the teaching of Pauls that "virtually all of the prepolymer is expelled" would lead one skilled in the art to the conclusion that it would be not necessary or prudent, in view of the costs, to include a polyisocyanate prepolymer containing less than 5% by weight of unreacted monomer in the foamed polyurethane resin formulation since substantially all of the formulation is expelled from the aerosol can due to its particular construction. Applicants submit that one skilled in the art would not see any need for reducing the residual amount of isocyanate monomeric materials in the composition in view of the fact that the composition is virtually completely expelled from the container.

The Examiner states that the foamed aerosol resin compositions are analogous to the lacquer formulations disclosed in the CA and Minato et al.

references. However, Applicants submit that the foamed urethane resin art, particularly as applied to aerosol cans, bears no relation to the problems involved in preparing a lacquer composition for application in thin layers to broad surfaces. Applicants therefore respectfully submit that a combination of CA and Minato et al. with Pauls is improper since there must be some suggestion to make the combination.

In view of the above discussion, Applicants respectfully submit that a rejection of the claims under 35 U.S.C. 103(a) over Pauls in view of CA and Minato et al. is untenable and respectfully request that the rejection be reconsidered and withdrawn.

Respectfully submitted,



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